



საქართველოს ტექნიკური უნივერსიტეტი  
GEORGIAN TECHNICAL UNIVERSITY

**Approved**  
at the meeting of the Council of the  
Faculty of Civil Engineering  
Protocol No. 4 of 04.07.2012  
**Amended by**  
Resolution № 01-05-04/156 of the  
Academic Council of GTU dated  
October 12, 2020

## Master's Educational Program

### Program Title

სასოფლო-სამეურნეო ჰიდრომელიორაცია

Agricultural Hydro-Melioration

### Faculty

აგრარული მეცნიერებების და ბიოსისტემების ინჟინერინგი

Agricultural Science and Biosystems Engineering

### Program Head/Heads

Associate Professor Maia KUPRAVISHVILI

### Qualification to be Awarded and the Extent of the Program in terms of Credits

Master of Agricultural hydro-melioration

*Will be awarded upon completion of at least 120 credits of the educational program*

### Language of Teaching

Georgian

### Prerequisite for Admission to the Program

A person with at least a bachelor's degree or equivalent academic degree who is enrolled through Master's examinations (General Master's Examination and examination/s as determined by the GTU) is eligible to study in the Master's program. Examination questions/tests will be posted on the GTU Training Department website at least one month prior to the examinations. Admission to the program after passing the Master's exams is possible according to the rules established by the Ministry of Education and Science of Georgia.

It is obligatory to present a certificate/document confirming knowledge of a foreign language at the B2 level (English, German, French, Russian).

Applicants educated abroad (who have completed a foreign language program) are not required to take an exam or present a certificate; an applicant who is unable to present the above certificate is required to take a test in one of the foreign languages (English, German, French, Russian) at the GTU computer center.

### **Program Description**

The program is based on the ECTS system; 1 credit is equal to 25 hours, which includes both contact and independent work hours. The distribution of credits is presented in the curriculum. The program lasts 2 years (4 semesters) and includes 120 credits (ECTS). One semester includes 20 weeks, of which the learning process takes place over a period of 15 weeks. The rector of the GTU issues an academic calendar before the beginning of the semester, which is published on the website.

The distribution of 120 credits in the educational program of Master's degree Agricultural Hydro-Melioration is as follows: 90 credits are allocated for professional development courses, of which 85 credits are compulsory education courses and 5 credits are elective courses, education courses include industrial practice in the amount of 10 credits, and course design is provided for 12 credits, and the research component is allocated 30 credits.

#### **Research component:**

Involves research work aimed at developing the Master's student's ability to make independent theoretical and practical reasoning and conclusions.

### **Program Objective**

The objective of the Master's educational program is to prepare a highly qualified and competitive Master who possesses systematic and profound knowledge who will be able to ensure: the selection of appropriate irrigation methods and design of modern irrigation systems in order to increase crop yields and efficient use of natural resources; the use of waterlogged and degraded land masses and increase fertility through the integrated use of drainage or irrigation systems and agromeliorative measures; assess the sustainability of water bodies and protect them from water erosion processes; adapting and managing an agricultural hydro-meliorator in an unpredictable and multidisciplinary work environment; forming and summarizing conclusions supported by his/her own reasoned scientific research, while adhering to standards of professional responsibility and academic ethics. The program will provide a solid foundation for graduates to continue their studies at the next level and for continuous professional development, so that with the help of their education they can contribute to the proper work of the field of agricultural hydro-melioration.

### Learning Outcomes/Competences (general and professional)

1. Determines profitability of agricultural production based on hydrologic conditions of the landscape and climatic requirements of crops;
2. Investigates physical-rheological and water-pore properties of soils; quantitative characterization of water erosion processes;
3. Using hydrologic-hydrogeological maps, calculates the value of input supply and water requirements of agricultural crops using the latest methods;
4. Performs complex generation of digital maps and 3D modeling of irrigation/drainage systems;
5. Studies the causes of soil over-watering, the need for soil desiccation and designs drainage systems;
6. Designs efficient irrigation systems using the latest technological methods;
7. Analyzes, monitors and protects the stability and reliability of water supply facilities;
8. Operationally manages, maneuvers, uses, and maintains the irrigation system in technically sound condition;
9. Identifies and justifies effective soil conservation and protection-improvement measures and presents conclusions to the scientific and professional community with observance of ethical norms;
10. Independently evaluates own learning process, plans for and directs further continuing education needs.

### Methods of achieving learning outcomes (teaching-learning)

- Lecture  Seminar (group work)  Practical  Laboratory  Practice  
 Course work/Project  Master's Thesis  Consultation  Independent work

In the learning process, depending on the specifics of a particular study course program, the following activities of the teaching-learning methods are used, which are outlined in the relevant study course programs (syllabi): discussion/debate, collaborative work, case study, demonstration, induction, laboratory work, analysis, problem-based learning (PBL), brain storming, synthesis, writing work, deduction, role-playing and situational games, oral or verbal work, explanation, practical work, cooperative learning, action-oriented learning, project development and presentation.

## Student's Knowledge Assessment System

The student's knowledge is assessed on a 100-point scale.

Positive grades are:

- (A)-Excellent - 91-100 points;
- (B)-Very Good – 81-90 points;
- (C)-Good – 71-80 points;
- (D)-Satisfactory – 61-70 points;
- (E)-Sufficient – 51-60 points.

Negative grades are:

- (FX) - Failed to pass – 41-50 points, which means that the student needs more work to pass and is allowed to take an additional exam once with independent work;
- (F) - Failed - 40 points or less, which means that the work done by the student is insufficient and he/she will have to study the subject again.

**Research component: completion and defense of the Master's Thesis** - a person who has completed all the educational components provided by the educational program will be allowed to defend the Master's Thesis. The completed qualifying thesis is the result of the independent research work of the Master's student. Submission, public defense and **assessment of the completed qualification work are carried out once, the assessment is done with 100 points**. The rule and procedure of evaluation are determined by the "Rules of evaluation of the research component of the Master's degree educational program ", approved by the Academic Council of the University on June 26, 2012 by the resolution № 704.

### Fields of employment

- Ministry of Environmental Protection and Agriculture of Georgia;
- Ministry of Regional Development and Infrastructure of Georgia;
- Georgian Amelioration LLC
- United Water Supply Company of Georgia;
- Georgian Water and Power;
- District Municipalities;
- Industry commissions;
- JSC Water design and other industry-related design organizations;
- Vocational and state colleges relevant to the field;
- Higher education institutions (laboratories);
- Farms, agro-firms, water users' organizations.

### Opportunities for continuing education

PhD educational programs

**Human and material resources needed to implement the program**

The program is provided with adequate human and material resources. For additional information, please find the attached documentation

**Number of attached syllabi:** 30